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Paper: **"Visualizable Mathematical Structures: A Framework for Evaluating Mathematical Representation in Computer Graphics"**

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Peer review:

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Reviewer 2: Aberqi Ahmed
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Reviewer 3: Blinded

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Please respond within the appointed time so that we can give the authors timely responses and feedback.

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Reviewer Name: Aberqi Ahmed	Email: ahmed.aberqi@usmba.ac.ma
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Date Manuscript Received: 17-06-2026	Date Review Report Submitted:
Manuscript Title: Criteria for Visualizable Mathematical Structures	
ESJ Manuscript Number: --28—25.05.2026	
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Evaluation Criteria:

Please give each evaluation item a numeric rating on a 5-point scale, along with a thorough explanation for each point rating.

Questions	***Rating Result*** [Poor] **1-5** [Excellent]

1. The title is clear, and it is adequate for the content of the article.	**2**
The title is generally accurate, but it somewhat understates the paper's contribution. Rather than merely presenting a set of criteria. *" A framework ....."*	
2. The abstract presents objectives, methods, and results.	**3**
Readers are given little insight into the process by which the framework was developed or validated.	
3. There are a few grammatical errors and spelling mistakes in this article.	**4**
In the abstract, Line 7/ for identifying ------> to identify Page 2, first paragraph: without explicitly defining the conditions **that make visualization pos**sible (Munzner, 2014).-------> without explicitly defining the conditions that enable visualization	
4. The study methods are explained clearly.	**3**
The authors propose a formal definition: a structure **M** is visualizable if there exists a *computable mapping* **V: M → G** (where G is a graphical representation space) that preserves essential geometric and topological properties. The study adopts a theoretical and analytical approach comprising four main stages: (1) a review of the relevant literature, (2) structural analysis of mathematical objects, (3) extraction and formulation of visualizability criteria, and (4) application of the resulting framework to a range of case studies, including lines, circles, spheres, helices, four-dimensional points, and abstract groups.	
5. The results are clear and do not contain errors.	**3**
The framework shifts focus from *how* to visualize (techniques) to *whether* a structure can be visualized (intrinsic properties). The mapping **V: M → G** — is never rigorously specified. Key terms such as "graphical representation space G," "computable mapping," and "preserves essential properties" are left undefined. Without precise formal definitions, the framework cannot be verified, tested mathematically. While the six criteria are intuitively reasonable, the paper provides no formal thresholds or decision procedure for applying them.	

The mathematical examples examined—such as lines, circles, spheres, helices, and sine functions—represent some of the most elementary structures encountered in computer graphics. As a result, their visualizability is largely self-evident and rarely subject to debate. The proposed framework is not evaluated on more challenging or ambiguous cases, such as manifolds with intricate topologies, or infinite-dimensional function spaces, where a rigorous assessment framework would be most valuable and its practical utility more convincingly demonstrated.

6. The conclusions or summary are accurate and supported by the content.	**3**
7. The references are comprehensive and appropriate.	**4**
yes	

Overall Recommendation (mark an X with your recommendation) :

Accepted, no revision needed	
Accepted, minor revision needed	**X**
Return for major revision and resubmission	
Reject	

Comments and Suggestions to the Author(s):

The topic is genuinely interesting — the intersection of graphical visualization, mathematics, and computer science is fertile ground. That said, the paper's mathematical rigor is limited, which undermines some of its theoretical ambitions. Its strongest contribution may be the questions it raises rather than the answers it provides, particularly around dimensionality reduction and low-dimensional representation — themes with significant relevance to data analysis and AI

Reviewer B:
Recommendation: Accept Submission

The TITLE is clear and it is adequate to the content of the article.

Clearing up the title may be necessary to accurately reflect the study's content.

The ABSTRACT clearly presents objectives, methods, results, and conclusions.

Further explanation of the results and conclusions may be required.

There are a few grammatical errors and spelling mistakes in this article.

There are a few grammatical errors.

The study METHODS are explained clearly.

Under the title Mathematical Case Studies, and within the previously established framework, it is supposed to refer to Table 1 in the text.
Table 1 requires a little clarification.
Certain equations require a little clarification.

The results are clear and do not contain errors.

The results may need to be clearly linked to the proposed framework.

The CONCLUSION or summary is accurate and supported by the content.

The CONCLUSION or summary is accurate and supported by the content.

The list of REFERENCES is comprehensive and appropriate.

The list of REFERENCES is comprehensive and appropriate.
Each in-text citation has been included in the list of references and largely vice versa.

Please rate the TITLE of this paper.

[Poor] **1-5** [Excellent]

Please rate the ABSTRACT of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the LANGUAGE of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the METHODS of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the RESULTS of this paper.

[Poor] **1-5** [Excellent]

4

Please rate the CONCLUSION of this paper.

[Poor] **1-5** [Excellent]

5

Please rate the REFERENCES of this paper.

[Poor] **1-5** [Excellent]

Overall Recommendation!!!

Accepted, no revision needed

Comments and Suggestions to the Author(s):
